

(No Model.)

2 Sheets—Sheet 1.

L. L. CULVER.
GRATE.

No. 450,058.

Patented Apr. 7, 1891.

Fig. I.

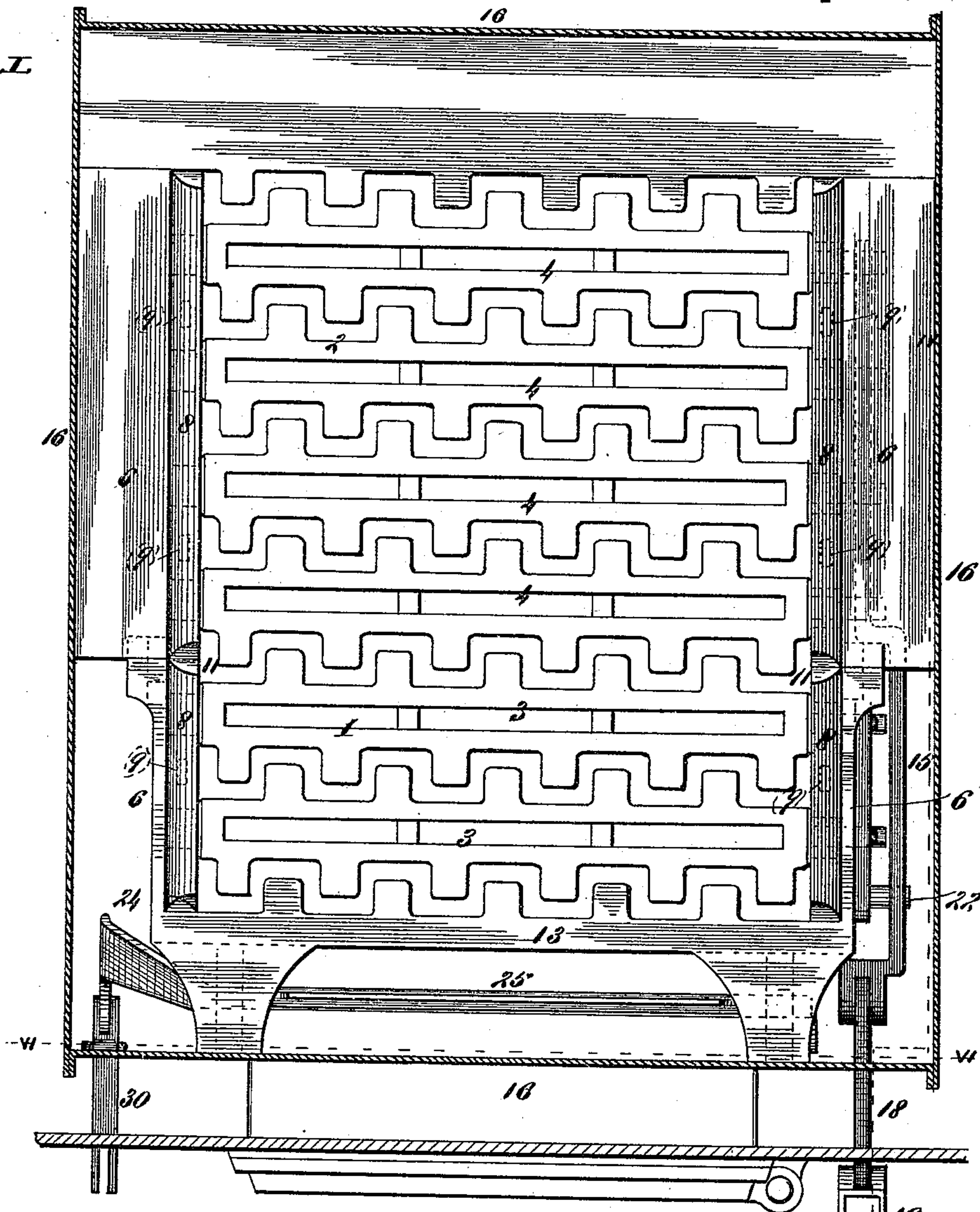


Fig. III.

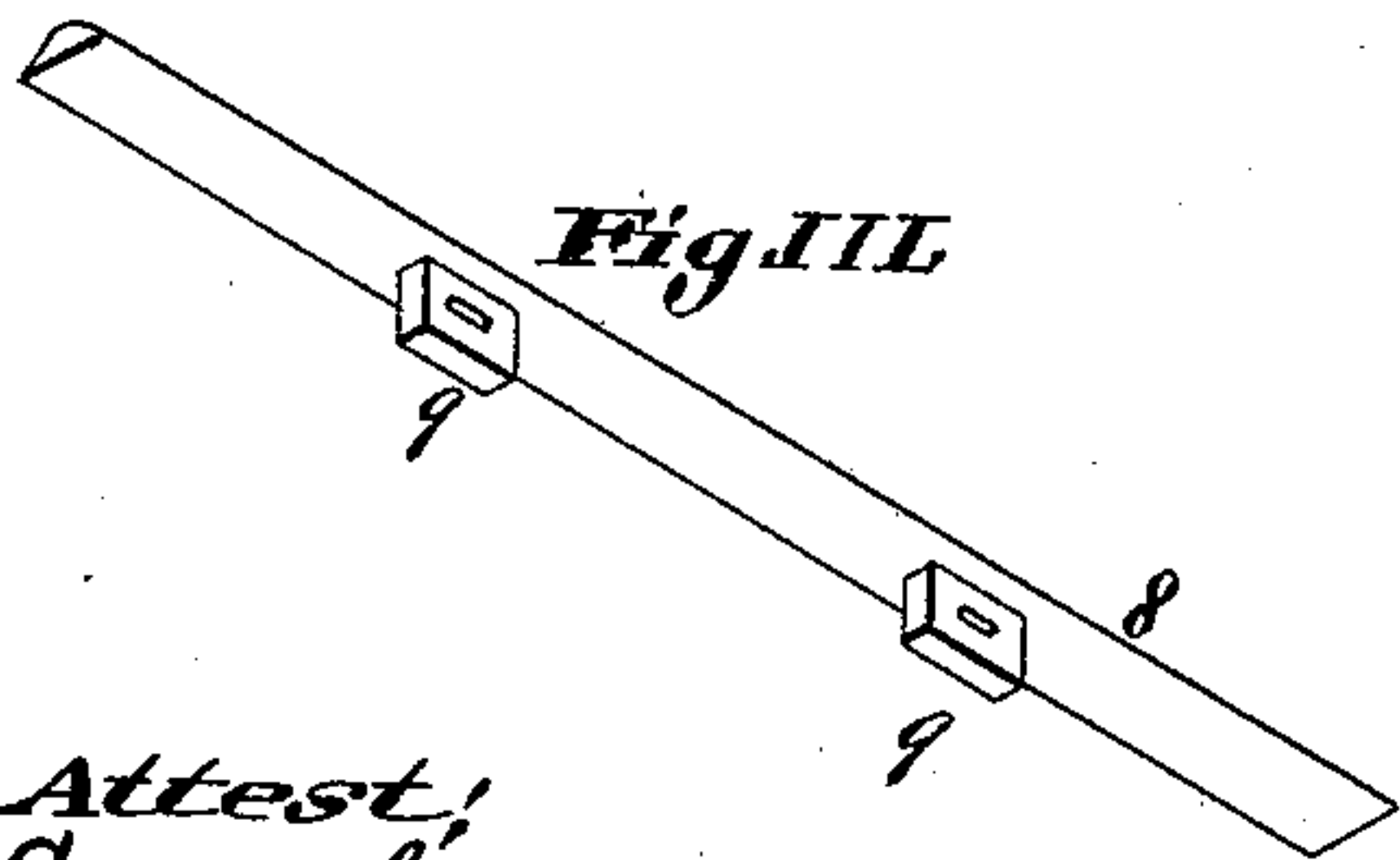
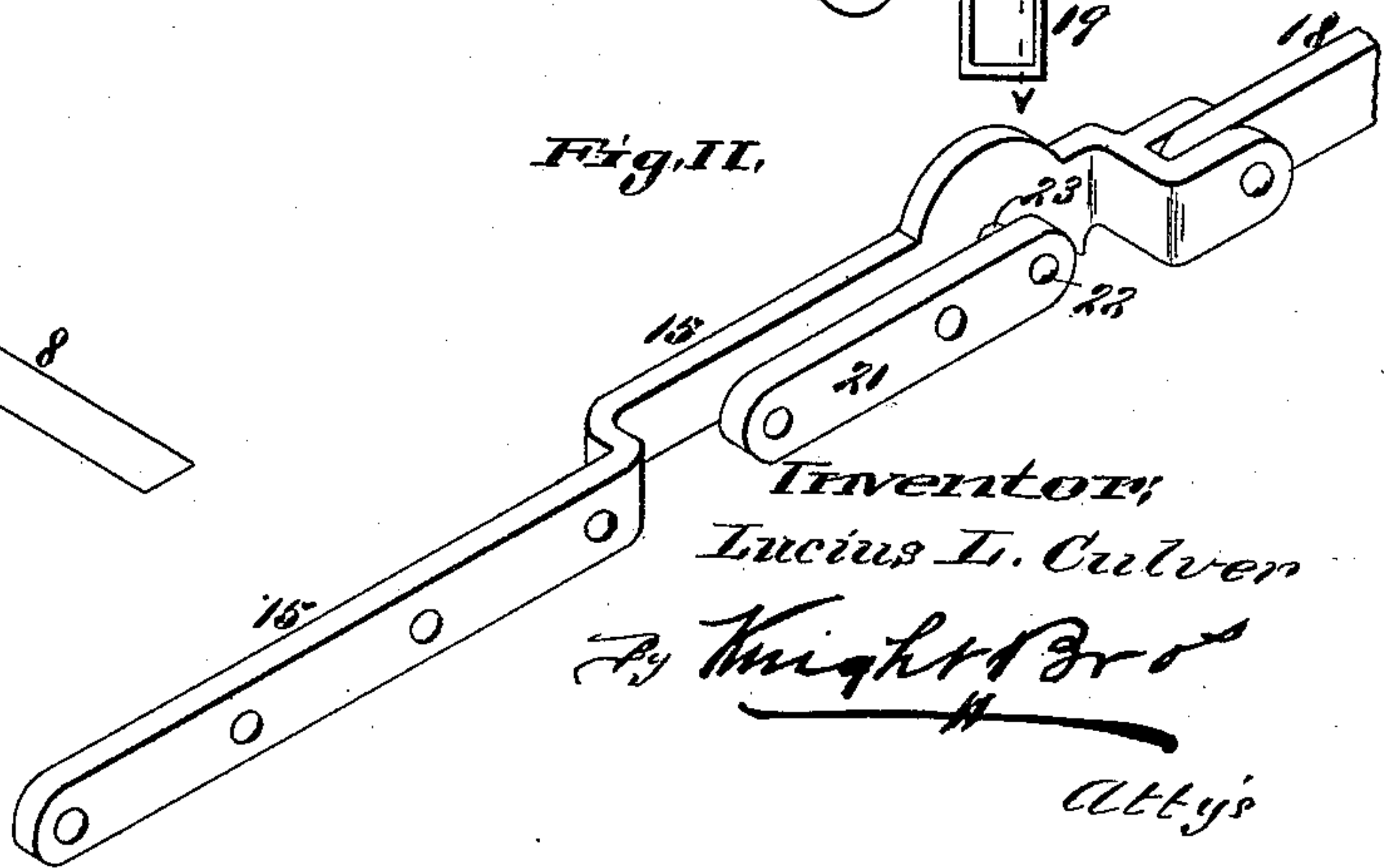


Fig. II.



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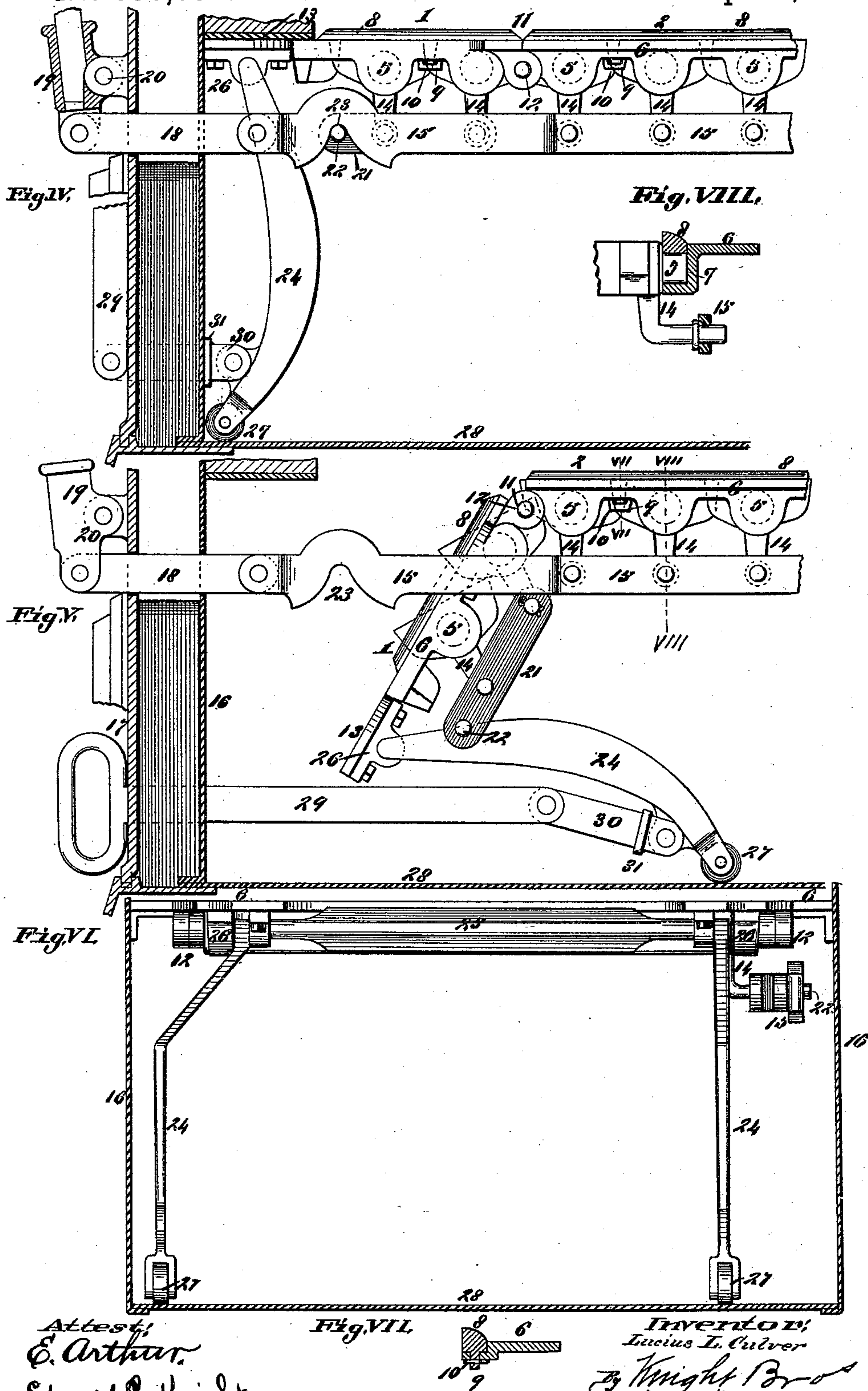
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2 Sheets—Sheet 2.

L. L. CULVER.
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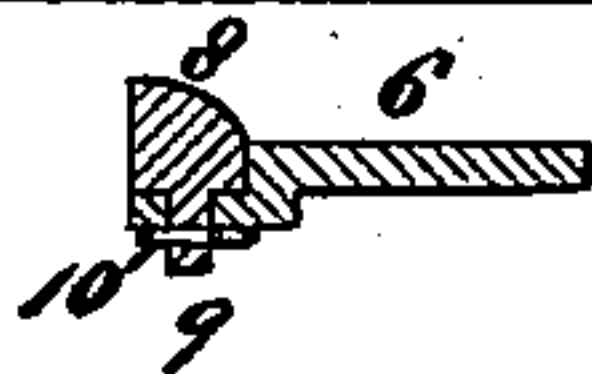
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Fig. VII



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UNITED STATES PATENT OFFICE.

LUCIUS L. CULVER, OF ST. LOUIS, MISSOURI.

GRATE.

SPECIFICATION forming part of Letters Patent No. 450,058, dated April 7, 1891.

Application filed May 23, 1890. Serial No. 352,856. (No model.)

To all whom it may concern:

Be it known that I, LUCIUS L. CULVER, of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Grates, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to certain improvements in shaking and dumping grates, intended more particularly for use in furnaces; and my invention consists in features of novelty hereinafter fully described, and pointed out in the claims.

Figure I is a top or plan view of the grate and its frame, showing the surrounding walls in horizontal section. Fig. II is an enlarged perspective view of the operating bar or rod. Fig. III is an enlarged detail perspective view of one of the bars or rails for forming the upper bearings of the journals of the grate-bars. Figs. IV and V are vertical sections taken on line IV V, Fig. I, Fig. IV showing the front section of the grate in its upper or using position and Fig. V showing the front section of the grate in its dumped position. Fig. VI is a vertical section taken on line VI VI, Fig. I. Fig. VII is a vertical section taken on line VII VII, Fig. V. Fig. VIII is a similar view taken on line VIII VIII, Fig. V.

Referring to the drawings, 1 represents the front section of the grate, and 2 the rear or inner section. The front section is composed of one or more bars 3 and the rear or inner section is composed of one or more bars 4. I have shown the front section composed of two bars and the inner section composed of four bars. Each bar is provided at each end with a journal 5.

6 represents the side pieces of a frame surrounding and supporting the grate. These side pieces have sockets 7 (one of which is shown in Fig. VIII) to receive the journals of the grate-bars, which are held in the sockets by bars or strips 8, made fast to the side of the frame by perforated ears 9 on the strips which fit in holes in the sides, where they are held by transverse keys 10. (See Fig. VII.) By taking out the keys and removing the strips the grate can be taken out.

The sides 6 and strips 8 are jointed at 11, the portion of the sides forward of this point

being hinged to the portion back of this point by pivot-pins 12. (See Figs. IV and V.) The portion of the frame forward of the pivots carry the bars 3 and the portion back of the pivots carry the bars 4. Forward of the pivots the sides of the frame are preferably made narrower than they are back of the pivots, (see Fig. I,) and they are joined by the front end piece 13. The sides of the frame back of the pivots rest on the usual setting of the furnace and support the entire grate as well as the front part of the frame, leaving the front part of the frame, with its two grate-bars, free to be dumped, as shown in Fig. V.

All of the grate-bars are provided at one side with cranks or arms 14. The cranks back of the joints 11 are connected to a bar or rod 15, which extends forward beyond the joints 11 and to near the front end of the furnace.

16 represents the walls of the furnace, and 17 the door-frame.

18 represents a link pivoted to the end of the bar 15 and extending through the front wall of the furnace and through the door-frame, where it is connected to the lower end of an operating-lever 19, pivoted at 20 to the door-frame.

The cranks 14 forward of the joints 11 are connected by a short link 21, which has a pin or projection 22, that fits in a notch or recess 23 in the bar 15 when the bars 3 are in their upper or using position. (See Fig. IV.) This pin-and-notch connection between the link 21 and bar 15 does not interfere with the dumping of the portion of the grate forward of the joints 11, while at the same time the longitudinal vibration of the bar 15 will shake the grate-bars forward of the joints 11 as well as those back of the joints. This will be clearly seen by looking at Fig. IV. To shake the grate, the bar 15 is moved back and forth by the lever 19.

The portion of the grate forward of the joints 11 may be dumped, as stated, to deposit clinkers, &c. It is supported in its upper position by legs 24, pivoted thereto, (preferably by means of a shaft 25 and boxes 26,) and provided with rollers 27 on their lower ends, which bear and move on the bottom 28 of the ash-pit.

29 represents a hand-bar connected by a link 30 to one of the legs 24, and by which

the legs can be moved back and forth from the position shown in Fig. IV to the position shown in Fig. V to dump the front portion of the grate. The link 30 has a collar 31, which comes up against the front wall of the furnace when the front part of the grate is raised, (see Fig. IV,) and the link, being of sufficient length to extend through the door-plate of the oven, permits the hand-bar 29 to be turned up into a vertical position, as shown in Fig. IV, to lock the front part of the grate in its upper or raised position.

I claim as my invention—

1. The combination of grate-bars, a jointed frame supporting the bars, means for shaking the bars, and means for dumping part of the frame and the bars forward of the joint of the frame, substantially as shown and described.

2. The combination of grate-bars, a jointed frame supporting the bars, and means for dumping part of the frame and the bars forward of the joint of the frame, substantially as shown and described.

3. The combination of grate-bars, a jointed frame supporting the bars, and means for dumping part of the frame and the bars forward of the joint of the frame, said means consisting, essentially, of pivoted legs and a hand-bar for moving the legs, substantially as shown and described.

4. The combination of grate-bars, a jointed frame supporting the bars, and means for dumping the bars forward of the joint of the

frame, said means consisting, essentially, of pivoted legs, rollers on the lower ends of the legs, a hand-bar, and a link provided with a collar and located between the inner end of the hand-bar and the legs, substantially as shown and described.

5. The combination of grate-bars provided with cranks, a jointed frame, a shaking-bar connected to the cranks of the grate-bars back of the joint of the frame, a link connecting the cranks of the grate-bars forward of the joint of the frame, and a detachable connection between said link and shaking-bar, substantially as and for the purpose set forth.

6. The combination of grate-bars provided with cranks, a jointed frame, a notched shaking-bar connected to the cranks of the grate-bars back of the joint of the frame, and a link connecting the cranks of the grate-bars forward of the joint of the frame, said link having a pin adapted to engage in the notch of the shaking-bar, substantially as and for the purpose set forth.

7. The combination of the grate-bars having journals, a frame jointed at 11 and having sockets to receive the journals of the bars, strips 8, jointed at 11 and secured to the frame over the journals of the grate-bars, and means for dumping the grate-bars forward of said joints, substantially as set forth.

LUCIUS L. CULVER.

In presence of—

E. S. KNIGHT,
THOS. KNIGHT.